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SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

YEAR-ROUND OPERATIONS OF SELECTIVE CATALYTIC REDUCTION SYSTEMS FOR NITROGEN OXIDE CONTROL AT CURRENT SLIP RATES PARADISE FOSSIL PLANT UNITS 1, 2, AND 3

Muhlenberg County, Kentucky

TENNESSEE VALLEY AUTHORITY

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The Proposed Decision and Need

Tennessee Valley Authority (TVA) proposes to move toward year-round operation of the selective catalytic reduction (SCR) systems for the control of nitrogen oxide (NO_X) emissions from Units 1, 2, and 3 at Paradise Fossil Plant (PAF). Although the SCR systems installed at PAF were designed for year-round operation, it was initially planned for operations during the ozone-producing season (May through September) at 2 parts per million volume (ppmv) ammonia slip to meet the requirements of the NOx State Implementation Plan (SIP).

The more stringent requirements for NO_X reductions in the recently finalized Clear Air Interstate Rule (CAIR) will likely necessitate year-round operation of some or all of TVA's SCRs by 2009. In 2007 and 2008, under CAIR, TVA and other utilities have the opportunity to earn NO_X allowances by reducing NO_X emissions during the non-ozone season prior to the 2009 compliance date. The TVA, 1999, *Paradise Fossil Plant Units 1, 2, and 3 Selective Catalytic Reduction Systems for Nitrogen Oxide Control Environmental Assessment* (EA) stated that the SCRs would be operated seasonally (May through September). The purpose of this Supplemental EA is to analyze the potential impacts from year-round operation of these SCRs.

Background

Paradise Fossil Plant is located in Muhlenberg County, western Kentucky, on the south bank of the Green River at river mile 100.2. The plant has three generating units with a combined net generation capability of over 7 million megawatt hours a year. Because each of the PAF boilers is a cyclone design, PAF is a relatively high producer of NO_X emissions, producing at the rate of 0.8 pound of NO_X per million British thermal units (lb NO_X/10^6 Btu) with no post-combustion controls. The NO_X reduction systems installed at PAF are "high-dust" SCRs, i.e., the SCR is installed upstream of the particulate control devices in the flue gas flow. Units 1, 2, and 3 SCRs are located upstream of the air heaters in the gas path. PAF Unit 2 came online in April 2000, Unit 1 in April 2001, and Unit 3 in April 2003, and each SCR became fully functional the following ozone season.

The ammonia supply system serving the SCRs is installed on a rail spur outside of the plant. This system consists of an unloading facility, storage tanks, feed pumps, vaporizers and dilution air mixing units, and necessary controls. Additionally, a water deluge (fogging) system is installed to limit the hazard from any accidental release of anhydrous ammonia from either the storage tanks or an unloading of truck or rail tank car.

The operation and environmental controls of the PAF SCRs described in TVA, 1999, are incorporated by reference into this supplemental review. The catalyst used in the SCR would be replaced or rejuvenated by one of the methods described in the EA on the *Replacement or Rejuvenation of Catalyst for Selective Catalytic Reduction of Nitrogen Oxides at Seven TVA Fossil Plants in the Tennessee Valley* (TVA, 2005a). The results of the 2005 catalyst EA are also incorporated by reference into this supplemental review.

TVA is also evaluating proposals to operate SCRs and other NO_X reducing technologies at ammonia slip rates higher than 2 ppmv. Unlike this review, which is a modification of a past action, a proposal to operate at higher slip rates could constitute a new scope and may require a new National Environmental Policy Act (NEPA) review. TVA is currently conducting demonstration tests to gather additional information on feasibility, performance, and ash contamination before developing proposals. Once the test results are analyzed, and in the event that TVA should propose to implement higher slip rates for ammonia on a long-term basis, year-round operation at the higher slip rates would be subject to the appropriate level of NEPA review. The present consideration of year-round operation of the SCRs at the current slip rate of 2-ppmv ammonia would not be affected by these future considerations.

Other Environmental Reviews and Documentation

LETTER TO FILES, CONSIDERATION OF YEAR-ROUND OPERATION OF SELECTIVE CATALYTIC REDUCTION SYSTEMS AT CURRENT AMMONIA SLIP RATES FOR SEVEN TVA FOSSIL-FUEL GENERATING PLANTS (TVA, 2005b), INDEX NUMBER 2005-107. TVA conducted a review of seven completed SCR EAs to ascertain whether year-round operation of these systems was adequately addressed in the analyses. It was determined that six of the EAs were adequate. However, since the scope of the PAF SCR EA (TVA, 1999) was limited to ozone season operation, preparation of a Supplemental EA to consider the impacts of year-round operation was indicated.

FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT (FONSI), REPLACEMENT OR REJUVENATION OF CATALYST FOR SELECTIVE CATALYTIC REDUCTION OF NO_X AT SEVEN TVA FOSSIL PLANTS IN THE TENNESSEE VALLEY (TVA, 2005a), INDEX NUMBER 2004-115. After reviewing options for rejuvenating or replacing catalyst used in SCR systems at seven TVA plants, TVA chose to maintain the flexibility to select an option from among the entire suite of proposed action alternatives, as economically and technologically appropriate to address plant-specific catalyst deactivation needs. The FONSI includes commitments relevant to on-site, *in situ* rejuvenation; on-site *ex situ*; and a combination of delayed rejuvenation with on-site *ex situ* and interim replacement with new catalyst.

FINAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT, INSTALLATION OF FLUE GAS DESULFURIZATION SYSTEM ON PARADISE FOSSIL PLANT UNIT 3, MUHLENBERG COUNTY, KENTUCKY (TVA, 2002), INDEX NUMBER 2002-152. TVA considered installation of flue gas desulphurization (FGD) equipment on Unit 3 of PAF in order to help TVA meet requirements under the 1990 Clean Air Act (CAA) amendments. The proposed equipment would use wet limestone-forced oxidation technology to reduce sulfur dioxide emissions by at least 95 percent at full load conditions.

The EA concluded that the potential environmental impacts of installing and operating the proposed scrubber would be insignificant with the features, safeguards, and mitigation incorporated in the proposed FGD design.

ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT, PARADISE FOSSIL PLANT UNITS 1, 2, AND 3, SELECTIVE CATALYTIC REDUCTION SYSTEMS FOR NITROGEN OXIDE CONTROL (TVA, 1999), INDEX NUMBER 434. TVA considered installation of high-dust SCRs at PAF to achieve 90 percent NO_X removal by 2001 in order to meet Title 1 CAA requirements for ozone reduction. It was determined that the potential health and safety impacts from transporting, handling, and using ammonia products and residual wastes could be addressed by strict compliance with federal regulations, operation at no more than 2-ppmv slip and use of appropriate operation controls and treatment measures to meet wet effluent toxicity and effluent discharge limits in the National Pollutant Discharge Elimination System (NPDES) permit.

Alternatives

Two alternatives are under consideration. Under the No Action Alternative, TVA would continue to restrict operation of the three PAF SCRs to the ozone season at the current slip rate of 2 ppmv. Under the Action Alternative, TVA would have the option to increase the operation of the three PAF SCRs beyond the ozone season up to full 12-month operations at the 2-ppmv slip rate, as needed, to meet the requirements of CAIR.

No Action Alternative

Under the No Action Alternative, the PAF SCRs would continue the current operation schedule during the May through September ozone season, remaining in compliance with all air regulatory requirements. TVA has begun implementing a strategy for meeting the January 2009 deadline in CAIR for achieving the allowable system-wide NO_X emission rate of 0.15 parts per million (ppm). This strategy includes implementation of year-round operation of the installed SCRs at seven fossil plants (Paradise, Cumberland, Allen, Widows Creek, Bull Run, Kingston, and Colbert). Year-round operation of the PAF SCRs is an important component of this strategy due to the large opportunity for emissions reduction at a relatively low cost. If operation of the PAF SCRs were not expanded beyond the ozone season, the TVA system would forego the opportunity for a substantial reduction in NO_X emissions. To compensate, TVA would either have to purchase NO_X allowances (i.e., emission credits) or make up the difference by increasing controls at other plants. Either of these options would be more expensive than increasing the duration of operation months of the PAF SCRs for the year.

Action Alternative

Under the Action Alternative, the three PAF SCRs would be operated beyond the 5-month ozone season, up to and including full 12-month operation. Although no major changes to the physical plant site would be required to accommodate the increased number of operational days, some equipment and systems would need to be winterized, some redundant equipment would be added, and other accommodations may be undertaken to ensure the availability of the SCR for 12-month operation. Depending on the number of days of operation, the amount of anhydrous ammonia required for operation of the SCRs would increase from the current amount of 10,000 tons per year up to as much as 25,000 tons per year. Deliveries of ammonia by rail and truck would increase proportional to the number of additional weeks of SCR operation. For the purposes of this assessment, the impact of full year-round operations will be considered. Year-round operation of the PAF SCRs would result in more frequent replacement or refurbishment of the catalyst.

Affected Environment and Evaluation of Direct, Indirect, and Cumulative Impacts

Because of the nature of the proposed action (*i.e.*, an increased number of SCR operating days) and the location of the action within the existing plant infrastructure, potential environmental effects are expected to be limited to those resulting from the increased use of both ammonia and catalyst on surface water and groundwater, air quality, transportation, and management of solid, hazardous, and/or special waste.

Surface Water

Increasing the number of days the SCRs would be operated would increase the total amount of ammonia used annually, which would in turn increase the total annual volume of ammonia slipped through the system. Ammonia is injected into the flue gas to mix with the NO_X and then passed through the catalyst in the SCRs. Since the reaction of ammonia with NO_X is not 100 percent complete, some unreacted ammonia remains in the flue gas leaving the SCR. This unreacted ammonia exiting the SCR is called ammonia slip. The slipped ammonia then reacts with available sulfur trioxide (SO_3), chlorine, and fluorine in the flue gas in the stack to produce ammonium compounds (i.e., ammonium sulfate, ammonium bisulfate, ammonia chloride, and ammonium fluoride). These ammonia compounds either exit the stack with the flue gases or are collected in the equipment and emission control devices where they can contaminate coal combustion byproducts (e.g., fly ash), which in turn can contaminate ash pond and chemical pond discharges.

The concentration of ammonia compounds that contaminates ash pond effluent (not the total annual amount discharged) and its potential for toxicity to aquatic organisms are the parameters of concern with regard to wastewater discharge to surface waters. The 1999 PAF NO_X Reduction EA explains that the maximum worst-case concentration of ammonia in the ash pond effluents is a result of the rate of slip, effluent flow after the pond reaches a steady-state concentration, and mixing within the ash ponds. Effluent concentration estimates in the original PAF NO_X Reduction EA were based straightforwardly upon rate of ammonia slip, ash pond flow, and/or mixing. The calculations assumed no loss of ammonia through chemical reaction, settling, biological uptake/removal, or volatilization. Generally, there should be little loss of ammonia through volatilization related to temperature or pH effects in the sluicing process. Since no removal mechanism (biological or mechanical) that could be seasonally related was applied in the analyses to reduce effluent concentrations, the conditions, concentrations, and resulting analytical findings are applicable regardless of season. Therefore, with implementation of commitments listed in the 1999 FONSI, year-round operation of the NO_X reduction systems should not affect TVA's ability to meet NPDES effluent discharge limits for water quality or cause toxicological effects to aquatic organisms.

Tables 1 and 2, below, are based on Tables 8 and 9 in the 1999 PAF NO_X Reduction EA. These tables were updated for this Supplemental EA to show the potential concentrations of ammonia at ash pond discharge serial number (DSN) 001. The concentrations in Tables 1 and 2 were calculated based on the above discussion of flow, mixing, and no assumed removal.

Table 1. Ammonia Loads From Paradise SCR System With an Ammonia Slip of 2 ppm

Unit	SCR Ammonia (NH_3) Slip	NH_3 Load in Flue Gas Leaving SCR (lb/hour)	Fraction of NH_3 to FGD Sludge (Units 1 and 2) or Ash Sluice Water (Unit 3)		NH_3 Load to Wastewater Treatment Units (lb/hour)	
			Worst Case	Maximum Expected	Worst Case	Maximum Expected
1	2 ppm	7.7	1.0	0.5	7.7	3.85
2	2 ppm	7.7	1.0	0.5	7.7	3.85
3	2 ppm	12.6	1.0	0.75	12.6	9.45
Total		28			28	17.15

Source: TVA, 1999

Table 2. Potential Ammonia Nitrogen Concentrations in Jacobs Creek Ash Pond Discharge (DSN 001)

Condition	NH_3 Load (lb/day)	Effluent Concentration of Ammonia as Nitrogen (NH_3-N) milligrams nitrogen per liter (mg N/L) [1]	
		No NH_3 Reduction Measures	Increased Flow from Bottom Ash Pond [2]
Worst Case:			
Units 1 and 2 only	370	1.21	0.69
Units 1, 2, & 3	672	2.16	0.94
Maximum Expected:			
Units 1 and 2 only	185	0.63	0.32
Units 1, 2, & 3	412	1.34	0.76

[1] Based on fly ash pond discharge of 31.43 million gallons per day (MGD), existing NH_3-N concentration of 0.5 milligrams per liter (mg/L), and mg/L = 0.09857 x lbs/day / MGD.
[2] Fly ash pond discharge increased 26 MGD to 57.43 MGD by rerouting bottom ash pond discharge.

Source: TVA, 1999

In support of the 1999 PAF SCR EA methodology, a monitoring program has been in place at the facility since the SCRs became operational. Figure 1 provides operational data as found in the pond systems for December 1999 through September 2005. The ammonia compounds resulting from Units 1 and 2 are reflected in the scrubber pipe effluent data. The samples for the scrubber effluent are taken directly from the end of the sluice pipe. No end-of-sluice pipe data are available for Unit 3, as the pipe is buried in a channel with additional constituents. Effluent flows from Units 1 and 2 ultimately meet flows from Unit 3 in the ash pond, and samples are collected at monitoring point DSN 001. Samples collected at DSN 002 are from the bottom ash pond effluent, and background samples from the Green River are collected at DSN 010.

As shown in Figure 1, the Ammonia-N concentration at DSN 001averages below 0.1 mg NH3-N/L and seldom has exceeded 0.2 mg NH3-N/L. Thus, the calculated loading and concentrations for DSN 001 (shown in Tables 1 and 2 - 1999 PAF NOX Reduction EA) were never topped. The measured ammonia concentrations at DSN 001 were almost at background levels which indicate some assimilation in the ash pond through mixing or biological removal. Although little biological removal is expected in cold weather, mixing is adequate to maintain the desired water quality with respect to ammonia.

The engineered features of the NO_X reduction systems, including a retention basin for spills and emergency water fogging to minimize risk of direct releases of ammonia, are adequate to meet regulatory requirements and designed to ensure safe handling of ammonia year-round. Therefore, direct impacts from accidental releases of ammonia beyond those analyzed in the original FONSI would not be expected during year-round operation of the SCRs.

The only additional effect that could be anticipated from year-round operations would be an incremental increase in total annual nitrogen load to the Green River. Currently, there are no numerical NPDES or other limits related to total annual weights of ammonia or nitrogen species discharged from TVA generating facilities. No consensus exists in the scientific community regarding levels of nutrients that trigger particular impacts on a broad geographical scale. Although nitrogen is an important nutrient in the dynamics of reservoir ecosystems, it is typically in abundance in the Green River and is neither the controlling factor for biological communities, nor the nutrient source creating nuisance water quality problems. However, to ensure ammonia levels stay within acceptable limits, TVA monitors the ammonia in the fly ash pond effluent.

<u>Groundwater</u>

The evaluation of groundwater quality impacts presented in the original EA is applicable to year-round operation of plant SCR units. The original assessment emphasized the potential for groundwater contamination resulting from seepage of ammoniated ash leachate from the Jacobs Creek Ash Pond (JCAP) into Jacobs Creek. The maximum rate of seepage from the ash pond to the creek was estimated using groundwater modeling methods to be approximately $4x10^{-4}$ cubic meters per second.

To estimate the ammonia as nitrogen (NH_3-N) loading to Jacobs Creek, the worst-case estimate of the maximum NH_3-N concentration in the ash pond assuming operation of all three units of 0.76 milligrams per liter (mg/L) (from Table 9 of original EA) was applied to leachate seepage entering the creek. Note that the pond effluent concentration estimate was based on a steady-state NH_3-N mass balance for the ash pond and would be applicable to year-round SCR operation. The resulting worst-case total NH_3-N loading of 26 grams/day (not 26 mg/day as incorrectly reported in the original EA) is negligible compared to the maximum potential effluent loading of NH_3-N to Jacobs Creek from JCAP (i.e., 7.78 kilograms per hour or 186,720 grams/day NH_3-N per Table 8 of original EA). JCAP effluent monitoring performed since January 2000 shows actual NH_3-N concentrations of less than 0.2 mg/L, which supports the conservatism and conclusions of the original seepage analysis.

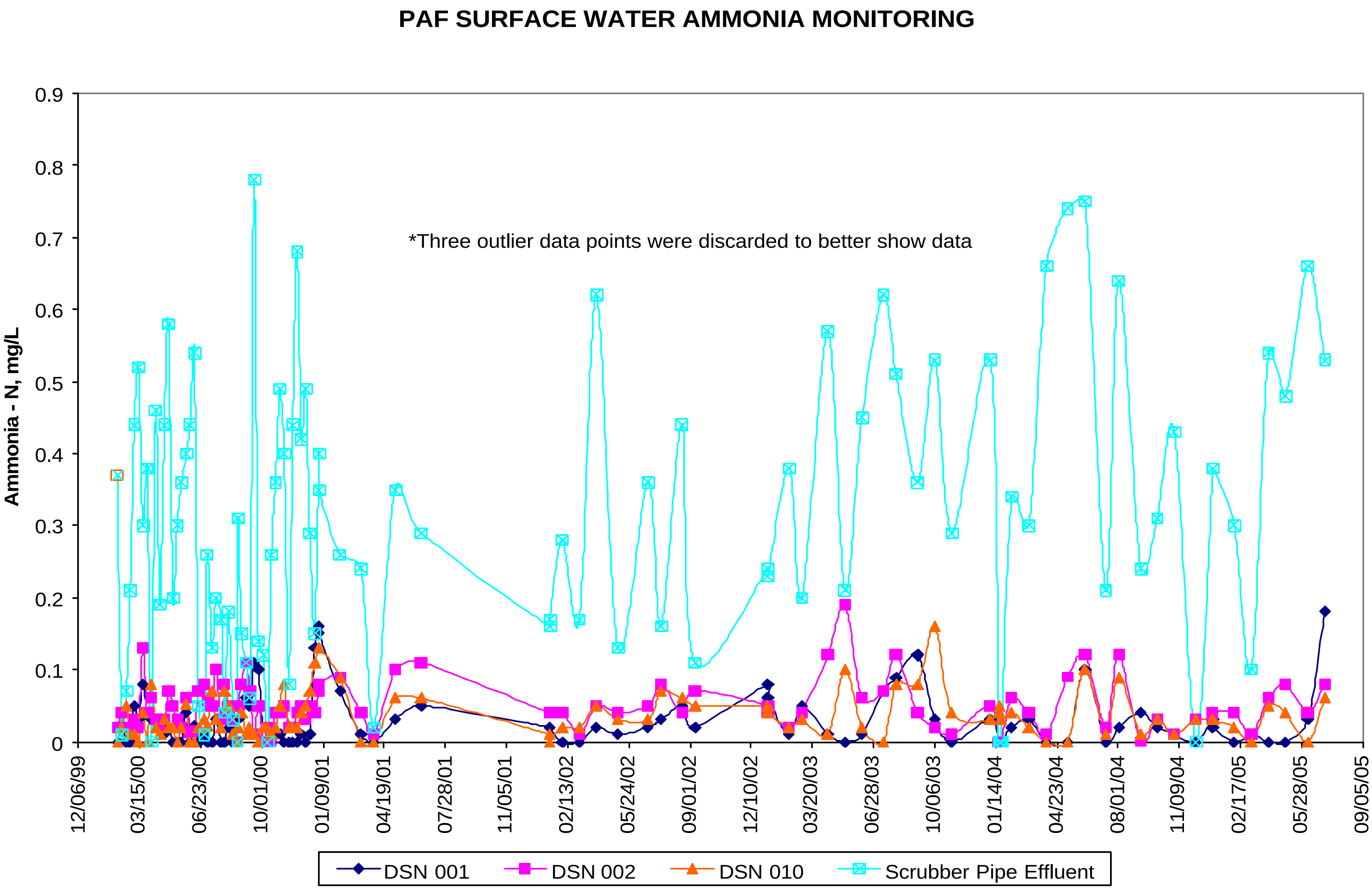

Figure 1. PAF Surface Water Ammonia Monitoring Data 1999-2005

In addition, the original assessment qualitatively evaluated the potential for groundwater contamination resulting from surface infiltration of ammonia from leaking storage tanks and associated transfer piping. Such events are expected to be sporadic; therefore, the original evaluation would be equally applicable to year-round SCR operation.

Given these conclusions, the overall groundwater resource impacts of year-round operation of plant SCR units are expected to be insignificant. Furthermore, the effect of ammoniated ash leachate seepage via groundwater to Jacobs Creek would be negligible compared with permitted pond effluent ammonia loadings.

Air Quality

The primary concern regarding air quality impacts from year-round operation of the PAF SCRs and the associated anhydrous ammonia storage and handling system would be release of ammonia to the atmosphere. The 2-ppmv ammonia slip rate, explained above, describes the concentration of ammonia as measured at the air preheater inlet that does not react with NO_X in the SCR. This unreacted ammonia tends to react with the SO_3 in the flue gas stream to form ammonium sulfate compounds, which are largely captured in the ductwork and pollution control equipment. Thus, there should be minimal ammonia emitted from the stacks at the current maximum 2-ppmv ammonia slip rate.

Typically, very small amounts of ammonia are released to the atmosphere when ammonia is transferred during delivery from truck or railcar. This occurs when the transfer hose is disconnected. However, the total amount of ammonia emitted annually from this activity should be less than 500 lb.

In 2004, operation of the PAF SCRs during the five-month ozone season May through September resulted in a reduction of approximately 23,800 tons of NO_X emissions. If the SCRs had operated year-round, it would have resulted in a reduction of an additional 29,800 tons of NO_X emissions for a total of approximately 53,600 tons of NO_X emissions removed. With only a small increase in ammonia emissions and more than doubling total NO_X emissions reduced, the year-round operation of the SCR should result in an overall improvement in air quality in the region.

Transportation

The transportation network that provides access to PAF is unchanged since 1999. However, the Average Annual Daily Traffic (AADT) counts have changed. Table 3 compares AADTs for roads in the vicinity of PAF reported for 1999 with those predicted for 2005, according to the Kentucky Transportation Cabinet (KTC).

Table 3. KTC Traffic Predictions

Route/Location	Reported AADT, 1999 EA	2005 Estimated AADT
U.S. Highway (US) 431 north of State Route (SR) 176	5,630	8,290
US 431 south of SR 176	5,550[1]	5,980
SR 70 east of US 431	1,980	2,000
SR 176 east of US 431	3,300	3,560
SR 176 west of US 431	2,580[2]	2,340

[1]Value not reported in 1999 EA; closest KTC reported value, 1997
[2]Value not reported in 1999 EA; closest KTC reported value, 2000

Coal is currently received by barge and truck delivery. There are 55 barge deliveries and 1,750 truck deliveries weekly, over a five-day period. Since August 1, 2005, a portion of the coal has been delivered by train. The remainder is delivered via trucks, at a rate of 800 trucks per five-day workweek. Train deliveries average one unit train per week with 75 cars per train. Eventually, the number of train deliveries is expected to increase to four 75-car trains per week. The delivery times are still unknown at this time, but initially, the trains will be unloaded on the 7:00 a.m. to 3:30 p.m. shift and eventually will be unloaded on the 3:30 p.m. to 11:30 p.m. shift. The impacts of coal-handling operations would be similar to those outlined in the 1999 PAF NO_X Reduction EA. Year-round SCR operation would not affect the mode of transportation of coal to PAF. The assessment here merely takes into account the changes in the coal delivery methods that have occurred since 1999.

Currently, all of the scrubber **limestone** is delivered by truck. The last rail deliveries of limestone for the FGD, or scrubber, process to PAF occurred five to six years ago. Approximately 1,400 tons of limestone is delivered per day, Monday through Saturday. At this rate, approximately 50 trucks per day are entering and leaving the plant six days per week. Although deliveries are randomly distributed over an average eight-hour workday, this translates into just over six trucks per hour. These operations differ from what was described in the 1999 PAF NO_X Reduction EA, which assumed that 100 percent of the limestone used would be delivered by rail. However, the subsequently prepared EA for the scrubber on PAF Unit 3 (TVA, 2002) considered the impact of delivering limestone by truck. Year-round SCR operation would not affect the anticipated mode of transportation of limestone to PAF. The assessment here merely takes into account the changes in the limestone delivery methods that have occurred since 1999.

Ammonia delivery and handling operations would be similar to those outlined in the 1999 EA. The ammonia deliveries would be made in conjunction with deliveries to Reed Minerals, and the ammonia cars would be staged on a side rail at Reed Minerals. As discussed in the Transportation Section of the 1999 PAF NO_X Reduction EA (TVA, 1999), an interchange yard consisting of several sidings is located in the vicinity of Reed Minerals, four miles west of PAF in Drakesboro, Kentucky. Due to logistics, only two ammonia cars would be brought onto the plant reservation at a time, at a rate of three days per week. Even with this delivery rate, the ammonia consumption exceeds the delivery rate by rail; therefore, truck deliveries of ammonia would also occur at a rate of four to eight trucks every two to three weeks. This breaks down to an additional two to three trucks per week, in and out of the plant.

The Burlington Northern Santa Fe Railroad reports Federal Railroad Administration statistics for 2004 that show train accident rates declined from 4.02 to 3.98 per million train miles. This number is higher than the reported 3.51 per million train miles reported in the 1999 EA however, but does show a decrease in current train accidents. According to the Association of American Railroads, railroads and trucks carry approximately the same ton-mileage of hazardous materials (AAR 2005). Trucks, however, have 16 times more hazmat releases than railroads. The majority of the ammonia received at PAF would be delivered by rail, decreasing the chance of an accidental release of a hazardous material during transport. Since the SCRs have been used at PAF, there have been minor seal or flange leaks, but no accidents involving ammonia have taken place.

It is evident that AADT levels as a whole have increased during the interim period since the original EA was released in 1999. Overall, the number of trucks used for deliveries would decrease for the proposed year-round SCR operations. An analysis was performed according to the *Highway Capacity Manual* (Transportation Research Board, 1994), and the 2005 traffic levels do not significantly change the levels of service for the road network from the 1999 EA analysis. The amount of train traffic proposed for year-round operations is much lower than the level analyzed in the 1999 PAF NO_X Reduction EA. One to four trains per week would be making coal deliveries, compared to the seven per week discussed in the original EA. These changes in delivery operations, coupled with the change to year-round operations, would not result in any significant change to the conclusions presented in the 1999 PAF NO_X Reduction EA.

Waste and Coal Combustion Byproducts

Since PAF uses wet ash disposal, no solid waste permits for ash disposal are required. As long as PAF meets its NPDES permit requirements, there would be no regulatory solid waste issues associated with year-round SCR operations. There are no additional hazardous waste or Comprehensive Environmental Responsibility, Compensation, and Liability Act or Emergency Planning & Community Right to Know Act reporting issues associated with year-round operation of the PAF SCRs. At the current slip rates, year-round operations would not adversely impact coal combustion byproduct marketing or management. NPDES issues related to the potential for increased ammonia in the ash pond are discussed in the Surface Water Section.

Year-round operation of the SCRs would necessitate more frequent replacement or refurbishment of the SCR catalyst. Catalyst replacement options for year-round operations of SCR at seven TVA fossil plants were analyzed in the SCR Catalyst Replacement/Rejuvenation EA (TVA, 2005a), and as previously stated, the results of that EA are incorporated by reference in this Supplemental EA.

Ammonia Storage and Handling Safety

The ammonia system is subject to the U.S. Environmental Protection Agency Risk Management Plan requirements in 40 Code of Federal Regulations (CFR) Part 68. Additionally, TVA's safety management program meets the substantive and the Occupational Safety and Health Administration Process Safety Management requirements in 29 CFR 1910.119.

The potential impact from the accidental release of ammonia from the anhydrous ammonia storage and handling system was assessed in the 1999 NO_X Reduction EA. In this rigorous evaluation of process hazards, potential problems with operation of the system during all weather conditions were considered and addressed. Even though the SCR is currently only operated during the ozone season, ammonia is present in the storage tanks and lines year-round. The year-round operation of the SCR would result in more ammonia being handled by the ammonia storage and handling system, but there should be no significant additional hazards associated with the year-round operation of the ammonia system that have not already been addressed.

Preferred Alternative

TVA has selected the Action Alternative as preferred, since it is an important component of the overall strategy for meeting the regulatory requirements of the 2005 CAIR and would result in beneficial effects from reduced NO_X emissions. Based on this EA, TVA has determined that the year-round operation of SCRs on Units 1, 2, and 3 of PAF would have minimal additional adverse impacts as compared to the current operation schedule, which is limited to the ozone season, and that no additional mitigation would be required beyond those commitments provided for in the 1999 FONSI for the PAF NO_X Reduction EA.

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